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## STRAMONIUM.

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SOME time ago my attention was called to the fact that enormous quantities of stramonium are found growing throughout the United States, seemingly for no other purpose than to furnish shade for hogs and hens and to perhaps now and then poison a cow or two.

As this plant is a valuable one medicinally, the question naturally arose, Why does our supply of it as a drug come from Europe?

Since drugs grown under different climatic conditions are known to vary considerably in therapeutic activity, it was thought that this might account for it and that the American-grown drug was not of sufficient value medicinally.

Reference to the analyses of over 100 lots of leaves of this plant, imported from Europe, showed a range from 0.20 percent to 0.57 percent of mydriatic alkaloids, with a mean close to the present pharmacopœial requirement of 0.35 percent.

A quantity of stramonium leaves that were collected by me from plants growing in a hog lot in Kendall county, Illinois, in the fall of 1911, yielded 0.46 percent of mydriatic alkaloids by the pharmacopœial method of assay.

In the latter part of September, 1914, I collected a quantity of stramonium leaves from plants growing in a barnyard on the south slope of Blue mound, near Lawrence, Kan. It will be remembered that that season was a very dry one. The plants were past flowering and the capsules were well developed. The leaves were small and somewhat withered and in some cases beginning to fall. These leaves were spread out and dried in a warm attic. This sample, when analyzed, was found to contain 16.8 percent of ash and 0.213 percent of alkaloids, both calculated to a basis of moisture-free drug. The yield of alkaloids in this sample was below the pharmacopœial requirement. It is thought that the age of the plants, together with their exposure to heat and drought, might account for the low alkaloidal content.

Later that same year, October 26, some stramonium was found growing in a potato patch in the 1,000 block on Illinois street in the city of Lawrence. These plants had evidently

come up after the cultivation of the potatoes had ceased. They were therefore younger than those furnishing the former sample and had not withstood the dry summer. The ground was soft; moisture seemed to be near the surface, and the plants appeared to be fresh and healthy. They ranged in height from 10 inches to 2½ feet. The small plants had not yet budded; the older ones were beginning to fruit, but had not passed the blossoming stage. About 50 pounds of herb were collected and separated into two lots, one of young plants and the other of mature plants. Each of these lots was divided into two nearly equal parts. From one part of each lot the leaves were removed from the stems before drying. The other part of each lot was dried before removing the leaves.

The drying was carried on in a warm room at a temperature not much above 30° C. The ash determinations were made on the air-dry sample as well as the alkaloidal assays, but both results were calculated to a moisture-free basis. The leaves from the older plants lost 85.5 percent and those from the younger plants 88 percent on total drying. The assays did not indicate any difference in the alkaloid contents of the leaves that were separated from the stems before drying and those that were not.

The leaves from the small plants contained 0.446 percent of alkaloids and 19.8 percent of ash. The stems from the small plants assayed 0.300 percent of alkaloids. The leaves from the older plants assayed 0.377 percent of alkaloids and contained 17.7 percent of ash. The stems from the older plants contained 0.080 percent of alkaloids and 7.8 percent of ash.

A part of the leaves in one of the lots from the older plants was not turned often enough and began to mold. This part of the drug was kept separate, and after drying was found to contain 0.365 percent of alkaloids and 23.5 percent of ash. This would seem to indicate that the alkaloid in the leaf was quite as resistant to the action of fungus as the cellular tissue of the leaf.

These assays do not agree with those of Dr. A. R. L. Dohme, who in 1893, when working with a sample grown in the vicinity of Baltimore, Md., found that the stems contained a larger percentage of alkaloids. (A. J. P., vol. 65, p. 479.)

F. A. Miller and J. W. Meader, of the firm of Eli Lilly & Co., of Indianapolis, in 1913 report (Jr. Ind. Eng. Chem. vol. 5,

p. 1014) the analyses of some native leaves grown under cultivation which ranged from 0.420 percent to 0.710 percent of alkaloids. These latter assays would seem to indicate that this plant, which apparently thrives in this country in places where nothing else will grow, may with care and cultivation be made to produce a drug much superior to that which is imported from Europe.

From the data available it is evident that the American-grown stramonium is equal if not superior to that grown in Europe, and that if we continue to import this drug it is not because of the superior product that we receive but because of the economic conditions that exist in this country.

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